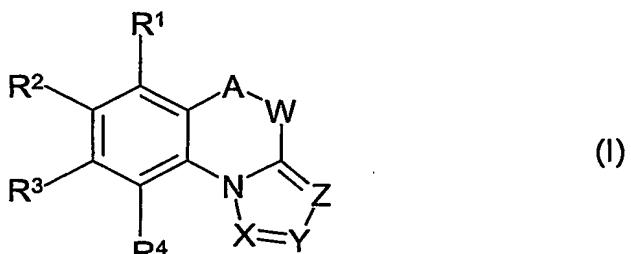


## CLAIMS

1. The use of a compound of the formula (I) or a salt thereof:



5

wherein:

A-W is N=N, N<sup>+(O<sup>-</sup>)</sup>=N or NR<sup>5</sup>-NR<sup>6</sup>, wherein A represents the atom or substituted atom shown on the left side of the groups representing A-W;

X is N or CR<sup>7</sup>;

10 Y is N or CR<sup>8</sup>;

Z is N or CR<sup>9</sup>;

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are each independently H, OH, halogen, nitro, cyano, formyl, amino, carbamoyl, CO<sub>2</sub>H or sulfamoyl, or benzyl or phenoxy,

15 where each of the latter two radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>1</sub>-C<sub>6</sub>)haloalkyl, halogen, OH, (C<sub>1</sub>-C<sub>6</sub>)alkoxy, (C<sub>1</sub>-C<sub>6</sub>)haloalkoxy, (C<sub>1</sub>-C<sub>6</sub>)alkyl-S(O)<sub>n</sub><sup>-</sup>, nitro, cyano, amino, (C<sub>1</sub>-C<sub>6</sub>)alkylamino, (C<sub>1</sub>-C<sub>6</sub>)dialkylamino, (C<sub>1</sub>-C<sub>6</sub>)alkoxycarbonyl and CO<sub>2</sub>H,

20 or are (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, (C<sub>2</sub>-C<sub>6</sub>)alkynyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl-(C<sub>1</sub>-C<sub>6</sub>)alkyl-, (C<sub>1</sub>-C<sub>6</sub>)alkoxy, (C<sub>2</sub>-C<sub>6</sub>)alkenyloxy, (C<sub>2</sub>-C<sub>6</sub>)alkynyoxy, (C<sub>1</sub>-C<sub>6</sub>)alkyl-C(=O)O<sup>-</sup>, (C<sub>1</sub>-C<sub>6</sub>)alkyl-S(O)<sub>n</sub><sup>-</sup>, (C<sub>1</sub>-C<sub>6</sub>)alkylamino, (C<sub>1</sub>-C<sub>6</sub>)dialkylamino, (C<sub>1</sub>-C<sub>6</sub>)alkoxycarbonyl, (C<sub>1</sub>-C<sub>6</sub>)alkylcarbonyl, (C<sub>1</sub>-C<sub>6</sub>)alkylcarbamoyl, (C<sub>1</sub>-C<sub>6</sub>)dialkylcarbamoyl, (C<sub>1</sub>-C<sub>6</sub>)alkylsulfamoyl or (C<sub>1</sub>-C<sub>6</sub>)dialkylsulfamoyl,

25 where each of the 18 last-mentioned radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, OH, (C<sub>1</sub>-C<sub>6</sub>)alkoxy, (C<sub>1</sub>-C<sub>6</sub>)alkyl-S(O)<sub>n</sub><sup>-</sup> and in the case of cyclic radicals also (C<sub>1</sub>-C<sub>6</sub>)alkyl and (C<sub>1</sub>-C<sub>6</sub>)haloalkyl;

$R^5$  and  $R^6$  are each independently H,  $(C_1-C_6)$ alkyl,  $(C_1-C_6)$ haloalkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl, formyl,  $(C_1-C_6)$ alkylcarbonyl,  $(C_2-C_6)$ alkenylcarbonyl,  $COR^{10}$ ,  $(C_1-C_6)$ alkoxycarbonyl,  $(C_1-C_6)$ alkyl- $SO_2^-$ ,  $(C_1-C_6)$ alkoxy- $(C_1-C_6)$ alkyl- or  $R^{10}$ ;

$R^7$ ,  $R^8$  and  $R^9$  are each independently H, halogen, nitro, cyano,  $S(O)_nR^{10}$ ,

5  $S(O)_nCH_2CO_2R^{11}$ ,  $S(O)_nCH_2CO_2N[(C_1-C_6)$ alkyl] $_2$ ,  $S(O)_nCH_2CONR^{12}R^{13}$ ,  $S(O)_nCH_2CONR^{14}NR^{15}$ , formyl, carbamoyl, OH, SH,  $R^{10}$ ,  $NR^{16}R^{17}$ , 1,3-dioxolan-2-yl,  $(C_1-C_6)$ alkyl,  $(C_3-C_6)$ cycloalkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl,  $(C_1-C_6)$ alkoxy,  $(C_1-C_6)$ alkyl- $S(O)_n^-$ ,  $(C_1-C_6)$ alkoxycarbonyl,  $(C_1-C_6)$ alkylcarbonyl,  $(C_1-C_6)$ alkylcarbamoyl or  $(C_1-C_6)$ dialkylcarbamoyl, where each of the 10 last-mentioned radicals is

10 unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, OH,  $(C_1-C_6)$ alkoxy,  $(C_1-C_6)$ alkyl- $S(O)_n^-$  and in the case of cyclic radicals also  $(C_1-C_6)$ alkyl and  $(C_1-C_6)$ haloalkyl;

$R^{10}$  is  $(CH_2)_m$ phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen,  $(C_1-C_6)$ alkyl,  $(C_1-C_6)$ haloalkyl,  $(C_1-C_6)$ alkoxy,

15  $(C_1-C_6)$ haloalkoxy, nitro, cyano,  $(C_1-C_6)$ alkyl- $S(O)_n^-$ ,  $(C_1-C_6)$ haloalkyl- $S(O)_n^-$ , amino,  $(C_1-C_6)$ alkylamino,  $(C_1-C_6)$ dialkylamino,  $(C_1-C_6)$ alkylcarbonyl, carbamoyl,  $(C_1-C_6)$ alkylcarbamoyl,  $(C_1-C_6)$ dialkylcarbamoyl, sulfamoyl,  $(C_1-C_6)$ alkylsulfamoyl and  $(C_1-C_6)$ dialkylsulfamoyl;

$R^{11}$  is H or  $(C_1-C_6)$ alkyl;

20  $R^{12}$  and  $R^{13}$ , or  $R^{16}$  and  $R^{17}$  are each independently H,  $(C_1-C_6)$ alkyl or  $R^{10}$ ; or  $R^{12}$  and  $R^{13}$ , or  $R^{16}$  and  $R^{17}$  together with the respective attached N atom form a five- or six-membered saturated ring which optionally contains an additional hetero atom in the ring which is selected from O, S and N, the ring being unsubstituted or substituted by one or more radicals selected from halogen,  $(C_1-C_6)$ alkyl and  $(C_1-C_6)$ haloalkyl;

25  $R^{14}$  and  $R^{15}$  are each independently H or  $(C_1-C_6)$ alkyl;

$n$  is 0, 1 or 2 in each of the occurrences; and

$m$  is 0 or 1;

as a herbicide or plant growth regulator.

30 2. The use as claimed in claim 1 wherein A-W is A-W is  $N=N$ ,  $N^+(O^-)=N$  or  $NH-NH$ .

3. The use as claimed in claim 1 or 2 wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are each independently H, OH, halogen, nitro, cyano, formyl, amino, carbamoyl, CO<sub>2</sub>H or sulfamoyl, or benzyl or phenoxy,

5 where each of the latter two radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>1</sub>-C<sub>4</sub>)haloalkyl, halogen, OH, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>1</sub>-C<sub>4</sub>)haloalkoxy, (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>-, nitro, cyano, amino, (C<sub>1</sub>-C<sub>4</sub>)alkylamino, (C<sub>1</sub>-C<sub>4</sub>)dialkylamino, (C<sub>1</sub>-C<sub>4</sub>)alkoxycarbonyl and CO<sub>2</sub>H,

10 or are (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>2</sub>-C<sub>4</sub>)alkenyl, (C<sub>2</sub>-C<sub>4</sub>)alkynyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl-(C<sub>1</sub>-C<sub>4</sub>)alkyl-, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>2</sub>-C<sub>4</sub>)alkenyloxy, (C<sub>2</sub>-C<sub>4</sub>)alkynyoxy, (C<sub>1</sub>-C<sub>4</sub>)alkyl-C(=O)O-, (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>-, (C<sub>1</sub>-C<sub>4</sub>)alkylamino, (C<sub>1</sub>-C<sub>4</sub>)dialkylamino, (C<sub>1</sub>-C<sub>4</sub>)alkoxycarbonyl, (C<sub>1</sub>-C<sub>4</sub>)alkylcarbonyl, (C<sub>1</sub>-C<sub>4</sub>)alkylcarbamoyl, (C<sub>1</sub>-C<sub>4</sub>)dialkylcarbamoyl, (C<sub>1</sub>-C<sub>4</sub>)alkylsulfamoyl or (C<sub>1</sub>-C<sub>4</sub>)dialkylsulfamoyl,

15 where each of the 18 last-mentioned radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, OH, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>- and in the case of cyclic radicals also (C<sub>1</sub>-C<sub>6</sub>)alkyl and (C<sub>1</sub>-C<sub>6</sub>)haloalkyl.

4. The use as claimed in claim 1, 2 or 3 wherein X is N or CR<sup>7</sup> wherein R<sup>7</sup> is H,

20 halogen, nitro, cyano, S(O)<sub>n</sub>R<sup>10</sup>, S(O)<sub>n</sub>CH<sub>2</sub>CO<sub>2</sub>R<sup>11</sup>, S(O)<sub>n</sub>CH<sub>2</sub>CONR<sup>12</sup>R<sup>13</sup>, S(O)<sub>n</sub>CH<sub>2</sub>CONR<sup>14</sup>NR<sup>15</sup>, formyl, carbamoyl, OH, SH, R<sup>10</sup>, NR<sup>16</sup>R<sup>17</sup>, 1,3-dioxolan-2-yl, (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl, (C<sub>2</sub>-C<sub>4</sub>)alkenyl, (C<sub>2</sub>-C<sub>4</sub>)alkynyl, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>-, (C<sub>1</sub>-C<sub>4</sub>)alkoxycarbonyl, (C<sub>1</sub>-C<sub>4</sub>)alkylcarbonyl, (C<sub>1</sub>-C<sub>4</sub>)alkylcarbamoyl, (C<sub>1</sub>-C<sub>4</sub>)dialkylcarbamoyl, where each of the 10 last-mentioned radicals is

25 unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, OH, (C<sub>1</sub>-C<sub>4</sub>)alkoxy and (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>-; in which R<sup>10</sup> is (CH<sub>2</sub>)<sub>m</sub>phenyl unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>1</sub>-C<sub>4</sub>)haloalkyl, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>1</sub>-C<sub>4</sub>)haloalkoxy, nitro, cyano, (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>-, (C<sub>1</sub>-C<sub>4</sub>)haloalkyl-S(O)<sub>n</sub>-, amino,

30 (C<sub>1</sub>-C<sub>4</sub>)alkylamino, (C<sub>1</sub>-C<sub>4</sub>)dialkylamino, (C<sub>1</sub>-C<sub>4</sub>)alkylcarbonyl, carbamoyl, (C<sub>1</sub>-C<sub>4</sub>)alkylcarbamoyl, (C<sub>1</sub>-C<sub>4</sub>)dialkylcarbamoyl, sulfamoyl, (C<sub>1</sub>-C<sub>4</sub>)alkylsulfamoyl and (C<sub>1</sub>-C<sub>4</sub>)dialkylsulfamoyl;

R<sup>11</sup> is H or (C<sub>1</sub>-C<sub>4</sub>)alkyl;

R<sup>12</sup> and R<sup>13</sup>, or R<sup>16</sup> and R<sup>17</sup> are each independently H, (C<sub>1</sub>-C<sub>4</sub>)alkyl or R<sup>10</sup>; or R<sup>12</sup> and R<sup>13</sup>, or R<sup>16</sup> and R<sup>17</sup> together with the respective attached N atom form a five- or six-membered saturated ring which optionally contains an additional hetero atom in the

5 ring which is selected from O, S and N, the ring being unsubstituted or substituted by one or more radicals selected from halogen, (C<sub>1</sub>-C<sub>4</sub>)alkyl and (C<sub>1</sub>-C<sub>4</sub>)haloalkyl; and R<sup>14</sup> and R<sup>15</sup> are each independently H or (C<sub>1</sub>-C<sub>4</sub>)alkyl.

5. The use as claimed in any one of claims 1 to 4 wherein Y and Z are each N.

10

6. The use as claimed in claim 1 wherein:

A-W is N=N, N<sup>+</sup>(O<sup>-</sup>)=N or NH-NH;

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are each independently H, OH, halogen, nitro, cyano, formyl, amino, carbamoyl, CO<sub>2</sub>H or sulfamoyl, or benzyl or phenoxy,

15 where each of the latter two radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>1</sub>-C<sub>4</sub>)haloalkyl, halogen, OH, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>1</sub>-C<sub>4</sub>)haloalkoxy, (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>-, nitro, cyano, amino, (C<sub>1</sub>-C<sub>4</sub>)alkylamino, (C<sub>1</sub>-C<sub>4</sub>)dialkylamino, (C<sub>1</sub>-C<sub>4</sub>)alkoxycarbonyl and CO<sub>2</sub>H,

20 or are (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>2</sub>-C<sub>4</sub>)alkenyl, (C<sub>2</sub>-C<sub>4</sub>)alkynyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl, (C<sub>3</sub>-C<sub>6</sub>)cycloalkyl-(C<sub>1</sub>-C<sub>4</sub>)alkyl-, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>2</sub>-C<sub>4</sub>)alkenylloxy, (C<sub>2</sub>-C<sub>4</sub>)alkynylloxy, (C<sub>1</sub>-C<sub>4</sub>)alkyl-C(=O)O-, (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>-, (C<sub>1</sub>-C<sub>4</sub>)alkylamino, (C<sub>1</sub>-C<sub>4</sub>)dialkylamino, (C<sub>1</sub>-C<sub>4</sub>)alkoxycarbonyl, (C<sub>1</sub>-C<sub>4</sub>)alkylcarbonyl, (C<sub>1</sub>-C<sub>4</sub>)alkylcarbamoyl, (C<sub>1</sub>-C<sub>4</sub>)dialkylcarbamoyl, (C<sub>1</sub>-C<sub>4</sub>)alkylsulfamoyl or (C<sub>1</sub>-C<sub>4</sub>)dialkylsulfamoyl,

25 where each of the 18 last-mentioned radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, OH, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>- and in the case of cyclic radicals also (C<sub>1</sub>-C<sub>6</sub>)alkyl and (C<sub>1</sub>-C<sub>6</sub>)haloalkyl;

X is N or CR<sup>7</sup>;

30 R<sup>7</sup> is H, (C<sub>1</sub>-C<sub>4</sub>)alkyl, (C<sub>1</sub>-C<sub>4</sub>)haloalkyl, (C<sub>2</sub>-C<sub>4</sub>)alkenyl, (C<sub>2</sub>-C<sub>4</sub>)alkynyl, (C<sub>1</sub>-C<sub>4</sub>)alkoxy, (C<sub>1</sub>-C<sub>4</sub>)haloalkoxy, halogen, nitro, cyano, (C<sub>1</sub>-C<sub>4</sub>)alkyl-S(O)<sub>n</sub>-, (C<sub>1</sub>-C<sub>4</sub>)haloalkyl-S(O)<sub>n</sub>-, S(O)<sub>n</sub>R<sup>10</sup>, S(O)<sub>n</sub>CH<sub>2</sub>CO<sub>2</sub>R<sup>11</sup>, S(O)<sub>n</sub>CH<sub>2</sub>CO<sub>2</sub>N[(C<sub>1</sub>-C<sub>4</sub>)alkyl]<sub>2</sub>,

$S(O)_nCH_2CONR^{12}R^{13}$ ,  $S(O)_nCH_2CONR^{14}NR^{15}$ ,  $(C_1-C_4)alkoxycarbonyl$ ,  $formyl$ ,  $(C_1-C_4)alkylcarbonyl$ ,  $(C_1-C_4)haloalkylcarbonyl$ ,  $carbamoyl$ ,  $(C_1-C_4)alkylcarbamoyl$ ,  $(C_1-C_4)dialkylcarbamoyl$ ,  $OH$ ,  $SH$ ,  $R^{10}$ ,  $NR^{16}R^{17}$  or  $1,3$ -dioxolan-2-yl; in which

$R^{10}$  is  $(CH_2)_mphenyl$  unsubstituted or substituted by one or more radicals selected

5 from the group consisting of halogen,  $(C_1-C_4)alkyl$ ,  $(C_1-C_4)haloalkyl$ ,  $(C_1-C_4)alkoxy$ ,  $(C_1-C_4)haloalkoxy$ , nitro, cyano,  $(C_1-C_4)alkyl-S(O)_n-$ ,  $(C_1-C_4)haloalkyl-S(O)_n-$ , amino,  $(C_1-C_4)alkylamino$ ,  $(C_1-C_4)dialkylamino$ ,  $(C_1-C_4)alkylcarbonyl$ ,  $carbamoyl$ ,  $(C_1-C_4)alkylcarbamoyl$ ,  $(C_1-C_4)dialkylcarbamoyl$ ,  $sulfamoyl$ ,  $(C_1-C_4)alkylsulfamoyl$  and  $(C_1-C_4)dialkylsulfamoyl$ ;

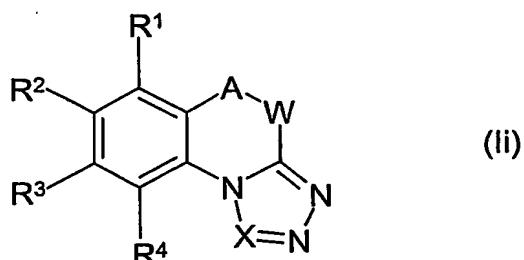
10  $R^{11}$  is  $H$  or  $(C_1-C_4)alkyl$ ;

$R^{12}$  and  $R^{13}$ , or  $R^{16}$  and  $R^{17}$  are each independently  $H$ ,  $(C_1-C_4)alkyl$  or  $R^{10}$ , or  $R^{12}$  and  $R^{13}$ , or  $R^{16}$  and  $R^{17}$  together with the respective attached  $N$  atom form a five- or six-membered saturated ring which optionally contains an additional hetero atom in the ring which is selected from  $O$ ,  $S$  and  $N$ , the ring being unsubstituted or substituted by one or more radicals selected from halogen,  $(C_1-C_4)alkyl$  and  $(C_1-C_4)haloalkyl$ ; and

15  $R^{14}$  and  $R^{15}$  are each independently  $H$  or  $(C_1-C_4)alkyl$ ; and

$Y$  and  $Z$  are each  $N$ .

7. A compound as claimed in claim 1, of formula (ii):



20

wherein:

$A-W$  is  $N=N$ ,  $N^+(O^-)=N$  or  $NH-NH$ , in which  $A$  represents the atom or substituted atom shown on the left side of the groups representing  $A-W$ ;

$X$  is  $N$  or  $CR^7$ ;

25  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are each independently  $H$ ,  $OH$ , halogen, nitro, cyano,  $formyl$ ,  $amino$ ,  $carbamoyl$ ,  $CO_2H$  or  $sulfamoyl$ , or  $benzyl$  or  $phenoxy$ ,

where each of the latter two radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of  $(C_1-C_6)alkyl$ ,  $(C_1-C_6)alkoxy$ ,  $(C_1-C_6)haloalkyl$ ,  $(C_1-C_6)haloalkoxy$ ,  $nitro$ ,  $cyano$ ,  $formyl$ ,  $amino$ ,  $carbamoyl$ ,  $CO_2H$  or  $sulfamoyl$ , or  $benzyl$  or  $phenoxy$ ,

$(C_6)$ haloalkyl, halogen, OH,  $(C_1-C_6)$ alkoxy,  $(C_1-C_6)$ haloalkoxy,  $(C_1-C_6)$ alkyl- $S(O)_n$ -, nitro, cyano, amino,  $(C_1-C_6)$ alkylamino,  $(C_1-C_6)$ dialkylamino,  $(C_1-C_6)$ alkoxycarbonyl and  $CO_2H$ ,

or are  $(C_1-C_6)$ alkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl,  $(C_3-C_6)$ cycloalkyl,  $(C_3-C_6)$ cycloalkyl- $(C_1-C_6)$ alkyl-,  $(C_1-C_6)$ alkoxy,  $(C_2-C_6)$ alkenyloxy,  $(C_2-C_6)$ alkynyoxy,  $(C_1-C_6)$ alkyl- $C(=O)O$ -,  $(C_1-C_6)$ alkyl- $S(O)_n$ -,  $(C_1-C_6)$ alkylamino,  $(C_1-C_6)$ dialkylamino,  $(C_1-C_6)$ alkoxycarbonyl,  $(C_1-C_6)$ alkylcarbonyl,  $(C_1-C_6)$ alkylcarbamoyl,  $(C_1-C_6)$ dialkylcarbamoyl,  $(C_1-C_6)$ alkylsulfamoyl or  $(C_1-C_6)$ dialkylsulfamoyl,

where each of the 18 last-mentioned radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, OH,  $(C_1-C_6)$ alkoxy,  $(C_1-C_6)$ alkyl- $S(O)_n$ - and in the case of cyclic radicals also  $(C_1-C_6)$ alkyl and  $(C_1-C_6)$ haloalkyl;

$R^7$  is H,  $(C_1-C_6)$ alkyl,  $(C_1-C_6)$ haloalkyl,  $(C_2-C_6)$ alkenyl,  $(C_2-C_6)$ alkynyl,  $(C_1-C_6)$ alkoxy,  $(C_1-C_6)$ haloalkoxy, halogen, nitro, cyano,  $(C_1-C_6)$ alkyl- $S(O)_n$ -,  $(C_1-C_6)$ haloalkyl- $S(O)_n$ -,  $(C_1-C_6)$ alkoxycarbonyl, formyl,  $(C_1-C_6)$ alkylcarbonyl,  $(C_1-C_6)$ haloalkylcarbonyl, carbamoyl,  $(C_1-C_6)$ alkylcarbamoyl,  $(C_1-C_6)$ dialkylcarbamoyl,  $NR^{16}R^{17}$  or 1,3-dioxolan-2-yl; and

$R^{16}$  and  $R^{17}$  are each independently H,  $(C_1-C_6)$ alkyl or  $R^{10}$ , wherein  $R^{10}$  is as defined above; with the exclusion of compounds wherein:

20

i) A-W is  $N=N$ ;  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are each H; and X is  $CBr$ ,  $CSO_2Me$ ,  $CSMe$ ,  $CMe$  or CH;

ii) A-W is  $N=N$ ;  $R^1$ ,  $R^3$  and  $R^4$  are each H;  $R^2$  is Cl; and X is CH;

iii) A-W is  $N=N$ ;  $R^2$ ,  $R^3$  and  $R^4$  are each H;  $R^1$  is OH; and X is CH;

iv) A-W is  $N^+(O^-)=N$ ;  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are each H; and X is CH;

v) A-W is  $NH-NH$ ;  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are each H; and X is  $CSMe$  or CH;

vi) A-W is  $NH-NH$ ;  $R^1$ ,  $R^3$  and  $R^4$  are each H;  $R^2$  is Me; and X is CH;

vii) A-W is  $N=N$ ;  $R^1$ ,  $R^2$  and  $R^4$  are each H;  $R^3$  is  $OMe$ ; and X is N;

viii) A-W is  $N=N$ ;  $R^1$ ,  $R^3$  and  $R^4$  are each H;  $R^2$  is  $OMe$ , Me or H; and X is N;

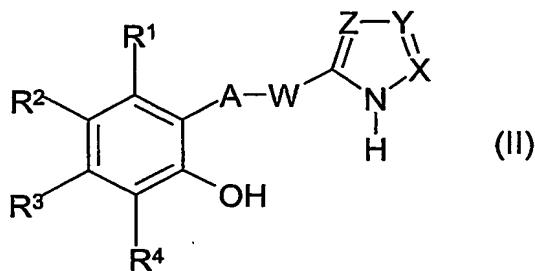
ix) A-W is  $N=N$ ;  $R^1$  and  $R^3$  are each H;  $R^2$  and  $R^4$  are each Me; and X is N;

x) A-W is  $N^+(O^-)=N$ ;  $R^1$ ,  $R^3$  and  $R^4$  are each H;  $R^2$  is Me or  $OMe$ ; and X is N;

- xi) A-W is  $\text{N}^+(\text{O}^-)=\text{N}$ ;  $\text{R}^1$  and  $\text{R}^3$  are each H;  $\text{R}^2$  and  $\text{R}^4$  are each Me; and X is N;
- and
- xii) A-W is NH-NH;  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  are each H; and X is N.

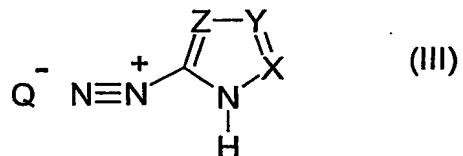
5 8. A process for the preparation of a compound of formula (I), or a salt thereof, as defined in claim 7 which comprises:

a) where A-W is N=N or  $\text{N}^+(\text{O}^-)=\text{N}$ , cyclodehydrating a compound of formula (II):

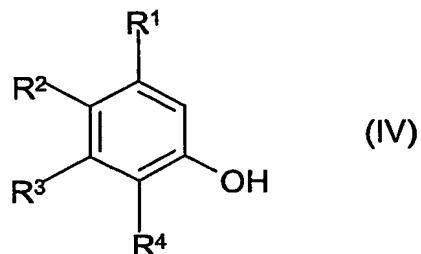


10 wherein A-W is N=N or  $\text{N}^+(\text{O}^-)=\text{N}$ , and  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$ ,  $\text{R}^4$ , X, Y and Z are as defined in formula (I); or

b) where A-W is N=N, and the other values are as defined above, coupling a diazonium salt of formula (III):



15 wherein X, Y and Z are as defined in formula (I) and Q is a chloride, sulfate or fluoroborate, with a compound of formula (IV):



wherein  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  are as defined in claim 1, to give an azo intermediate of formula (II) wherein A-W is N=N, and the other values are as defined in formula (I),  
20 followed by the above described cyclodehydration; or

c) where A-W is  $NR^5-NR^6$ ;  $R^1, R^2, R^3; R^4, R^6, X, Y$  and  $Z$  are as defined in formula (I), and  $R^5$  is as defined in formula (I) with the exclusion of H, reacting the corresponding compound of formula (I) wherein  $R^5$  is H, with a compound of formula (VI):



wherein  $R^5$  is as defined in formula (I) with the exclusion of H, and L is a leaving group; or

d) where A-W is  $NR^5-NR^6$ ;  $R^1, R^2, R^3; R^4, R^5, X, Y$  and  $Z$  are as defined in formula (I), and  $R^6$  is as defined in formula (I) with the exclusion of H, reacting the corresponding compound of formula (I) wherein  $R^6$  is H, with a compound of formula (VII):

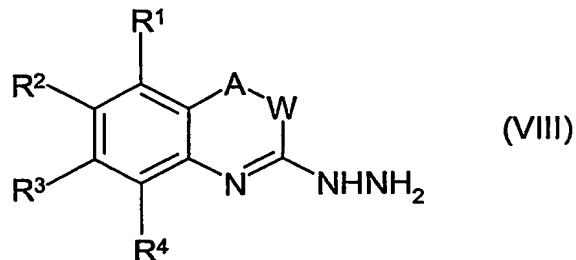


wherein  $R^6$  is as defined in formula (I) with the exclusion of H, and L is a leaving group; or

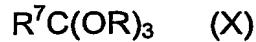
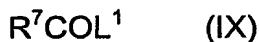
e) where A-W is  $NR^5-NR^6$ ,  $R^5$  and  $R^6$  are each H, and the other values are as defined in formula (I), reducing the corresponding compound of formula (I) wherein A-W is  $N=N$  or  $N^+(O^-)=N$ ; or

20 f) where A-W is  $N=N$ , and the other values are as defined in formula (I), reducing the corresponding compound of formula (I) wherein A-W is  $N^+(O^-)=N$ ; or

25 g) where A-W is  $N=N$  or  $N^+(O^-)=N$ ,  $X$  is  $CR^7$ ,  $Y$  and  $Z$  are each N, and the other values are as defined in formula (I), reacting a compound of formula (VIII):

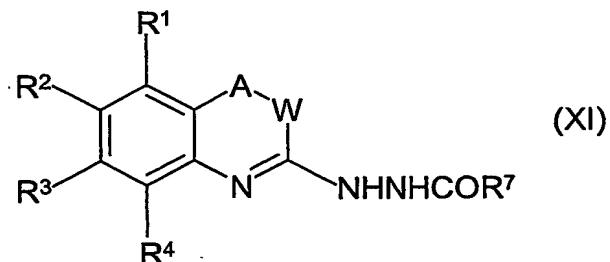


wherein A-W is N=N or N<sup>+(O<sup>-</sup>)</sup>=N, R<sup>7</sup> is H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>1</sub>-C<sub>6</sub>)haloalkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, (C<sub>2</sub>-C<sub>6</sub>)alkynyl or R<sup>10</sup>, and R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined in formula (I), with a carboxylic acid or an equivalent thereof of formula (IX) or (X):



5 wherein R<sup>7</sup> is H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>1</sub>-C<sub>6</sub>)haloalkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, (C<sub>2</sub>-C<sub>6</sub>)alkynyl or R<sup>10</sup>, and L<sup>1</sup> is H or a leaving group; or

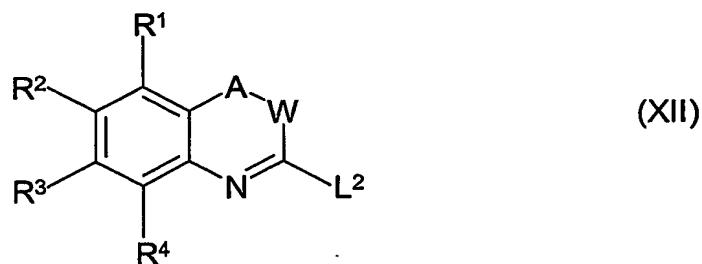
h) where A-W is N=N or N<sup>+(O<sup>-</sup>)</sup>=N, X is CR<sup>7</sup>, Y and Z are each N, and the other values are as defined in formula (I), cyclising a compound of formula (XI):



10

wherein A-W is N=N or N<sup>+(O<sup>-</sup>)</sup>=N, R<sup>7</sup> is H, (C<sub>1</sub>-C<sub>6</sub>)alkyl, (C<sub>1</sub>-C<sub>6</sub>)haloalkyl, (C<sub>2</sub>-C<sub>6</sub>)alkenyl, (C<sub>2</sub>-C<sub>6</sub>)alkynyl or R<sup>10</sup>, and R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined in formula (I), in the presence of a dehydrating agent or a halogenating agent; or

15 i) where A-W is N=N or N<sup>+(O<sup>-</sup>)</sup>=N, and R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined in formula (I), reacting a compound of formula (XII):



20 wherein A-W is N=N or N<sup>+(O<sup>-</sup>)</sup>=N, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined in formula (I), and L<sup>2</sup> is a leaving group, with a metal azide of formula (XIII):



wherein M is an alkali metal; or

j) where A-W is  $N^+(O^-)=N$ , and the other values are as defined in formula (I), oxidising the corresponding compound of formula (I) in which A-W is N=N.

9. A herbicidal or plant growth regulating composition characterised in that it  
5 comprises one or more compounds of the formula (I) or salts thereof as defined in any one of claims 1 to 7 and formulation auxiliaries which are customary in crop protection.

10. A method of controlling harmful plants or regulating the growth of plants  
characterised in that it comprises applying an effective amount of one or more  
10 compounds of the formula (I) or salts thereof as defined in any one of claims 1 to 7 to the plants to plant seeds or to the area under cultivation.